4.4 HYDROLOGY AND WATER QUALITY

4.4.1 Environmental Setting

Surface Water

Regional Hydrologic Setting

The proposed Project site is at the southeastern end of the Sacramento Valley, within Sacramento and San Joaquin counties at the northeastern margin of the Sacramento River/San Joaquin River Delta (the Delta). It is bound by the Mokelumne River and San Joaquin River watersheds on the south. In general, the Sacramento Valley experiences mild winters with moderate precipitation; summers in the valley are hot and dry. The proposed Project site is within a semiarid portion of the Sacramento Valley and, on average, receives 17 inches of rainfall annually (WRCC 2007; Rantz 1972).

The Sacramento Valley comprises the northern section of the larger California Central Valley, otherwise termed the Great Valley Geomorphic Province.[1] The Central Valley is an extensive alluvial plain, 400 miles long by about 50 miles wide, whose floor ranges in altitude from about sea level to a few hundred feet above sea level. Like much of the valley, the proposed Project area is comprised of low alluvial plains that slope gently upward from the Sacramento River; these alluvial plains are coalesced alluvial fans built up by shifting streams that drained the Sierra Nevada during the Pleistocence Age (1.6 million to 10,000 years ago) (Johnson 1985).

The principal surface water bodies relevant to the proposed Project are the Mokelumne River and the Cosumnes River. The Mokelumne River and the Cosumnes River drain approximately 762 and 768 square miles,[2] respectively, and generally flow west from their headwaters in the Sierra Nevada mountains. The Consumes River empties into the Mokelumne River just downstream of the proposed Project site; the Mokelumne River subsequently drains into the Delta some 18.5 miles downstream of the proposed Project site. Sixteen major dams or diversions have dramatically altered the lower Mokelumne River's flow regime (Wheaton et al. 2004). Average annual discharge of the Mokelumne River is 391,710 acre-feet; the average annual flow is 541 cubic feet per second (cfs) (USGS 2005). The Cosumnes River historically flowed perennially;

[1] Geomorphic provinces are naturally defined geologic regions that display a distinct landscape or landform; eleven provinces are distinguished in California (CGS 2002) with each region displaying unique, defining features based on geology, faults, topographic relief and climate.

[2] For the Mokelumne River, the reported drainage area is for that portion of the watershed upstream of the confluence with the Cosumnes River and includes the Dry Creek watershed.

however, surface flow now ceases in a 5- to 10-mile section of the river (between Meiss Road and State Route 99) nearly every year at the end of the dry season (SCWA 2004). With the exception of this loss of base flow, the Cosumnes River maintains a relatively unimpaired hydrograph, as it is one of the few unimpounded rivers flowing from the Sierra Nevada mountains into the Central Valley (Booth et al. 2006).

The proposed pipeline would be installed beneath both of these rivers. Additional crossings of surface water bodies, by Horizontal Directional Drill (HDD) technology or hammer and bore, involve two unnamed tributaries, a drainage canal, an irrigation canal, two irrigation ditches, and water bodies within the Stone Lakes National Wildlife Refuge (NWR). In addition, the proposed Project includes removal of a suspension bridge across the Cosumnes River.

Flooding

The Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding during a 100-year flood event (i.e., one percent chance of occurring in a given year). The majority of the proposed Project falls within the 100-year floodplain delineated by FEMA (2004). The southern portion of the proposed Project site that extends from the south bank of the Mokelumne River to a point about 5,250 feet to the north, near the second HDD exit area, lies within the Cosumnes River Designated Floodway (Reclamation Board 1974).

Much of the land within the Delta and adjacent areas is protected from flooding by a vast network of levees and engineered drainage canals. The proposed Project would cross one non-project[3] levee located on the south bank of the Mokelumne River. The pipeline would be a minimum of 60 feet below the base of this levee.

Surface Water Quality

The Central Valley Regional Water Quality Control Board (CVRWQCB) manages water quality in the proposed Project area. For the water bodies under its jurisdiction, the CVRWQCB has adopted water quality standards comprised of the designated beneficial uses of water and criteria and objectives to protect those uses. The CVRWQCB has identified the Cosumnes River as being impaired (i.e., not attaining one or more designated beneficial uses) due to exotic species, and the Mokelumne River as being impaired by elevated copper and zinc concentrations attributable to resource extraction

[3] A non-project levee is defined by State Water Code as a local flood control levee in the Delta that is not a project facility under the State Water Resources Law of 1945.

operations (CVRWQCB 2006). The Delta has been identified as being impaired due to a number of pollutants, including constituents of pesticides, herbicides and mercury; sources of these pollutants are primarily agriculture and urban runoff (CVRWQCB 2006). Regulatory frameworks and management actions regarding water quality in the Project area are discussed in further detail below.

Monitoring data indicate that the Cosumnes River is also affected by nutrients and suspended sediments originating in the lower portion of the watershed. Nutrient loading is strongly affected by a few point sources (i.e., wastewater treatment facilities in El Dorado County) and non-point sources related to urbanized areas and agricultural activity (SCWA 2004).

Surface Water Use

Water in southern Sacramento County along the northern portion of the proposed Project site is managed and supplied by the Sacramento County Water Agency (SCWA), Zone 40 (Zone 40). Based on existing land uses in and near the proposed Project site, the majority of surface water in the area is used for irrigation of agricultural crops. Outside of the Zone 40 service area and adjacent to the proposed Project site, water supplies are generally provided by private groundwater wells (PG&E 2006a). There are no public water intake structures in close proximity to the proposed Project site (PG&E 2006a).

Groundwater

Aquifers

The Department of Water Resources (DWR) (2004) has delineated and described the groundwater basins within the Sacramento Valley. The proposed Project site overlies the South American Subbasin (SA Subbasin) of the Sacramento Valley Groundwater Basin. The SA Subbasin is bounded on the east by the Sierra Nevada mountains, on the west by the Sacramento River, on the north by the American River, and on the south by the Cosumnes and Mokelumne rivers. Water bearing formations of the SA Subbasin are comprised of continental deposits of Late Tertiary to Quaternary age; these include younger alluvium consisting of flood basin deposits, dredge tailings, and Holocene stream channel deposits, older alluvium, and Tertiary volcanics (Mehrten Formation). Most of the proposed pipeline would overlie the older alluvium, while the southern extent (approximately 5,250 feet) would overlie the stream channel deposits of the Cosumnes and Mokelumne rivers (Wagner et al. 1987). The older alluvium consists

of loosely to moderately compacted sand, silt, and gravel, has a thickness of approximately 100 to 650 feet, and is moderately permeable (DWR 2004).

The water bearing formations of the SA Subbasin, and Sacramento County in general, can be separated into two strata: the younger and older alluvium formations which form an upper, unconfined shallow aquifer system, and a deep, semi-confined aquifer system which consists primarily of the Mehrten Formation (Wagner et al. 1987; SCWA 2004). Within Zone 40, the shallow aquifer extends approximately 200 to 300 feet below ground surface (bgs). The deep aquifer is separated from the shallow aquifer by a discontinuous, semi confining clay layer; the base of the potable water portion of the deep aquifer averages approximately 1,400 feet bgs (SCWA 2004).

Groundwater Quality

Water quality in the shallow aquifer is regarded as superior to that of the deep aquifer system (SCWA 2004). The shallow aquifer is favored principally because the deep aquifer system, namely the Mehrten Formation, contains higher concentrations of iron and manganese, rendering this water less desirable. The deep aquifer also has higher concentrations of total dissolved solids (TDS), though it typically meets water quality standards as a potable water source. Water from the shallow aquifer generally does not require treatment other than disinfection (SCWA 2004). The shallow aquifer is typically targeted for private domestic wells, requiring no treatment unless high arsenic values are encountered. Older municipal wells and all domestic wells have been constructed in the shallow aquifer zone to avoid the necessity for treatment.

For Zone 40, source groundwater quality meets all California Code of Regulations (CCR) Title 22 primary and secondary drinking water quality standards with the exception of iron, manganese, and arsenic (SCWA, 2004). Iron and manganese concentrations exceed standards developed for aesthetic concerns and do not pose a health hazard. Arsenic concentrations in six Zone 40 wells have been measured at levels that exceed recently implemented Federal drinking water standards (SCWA 2004); water used from these wells is treated in order to comply with primary drinking water standards. An earlier study of groundwater in Sacramento County found only a few wells that had arsenic, fluoride, mercury, and molybdenum in excess of recommended limits (Johnson 1985).

Groundwater Levels and Use

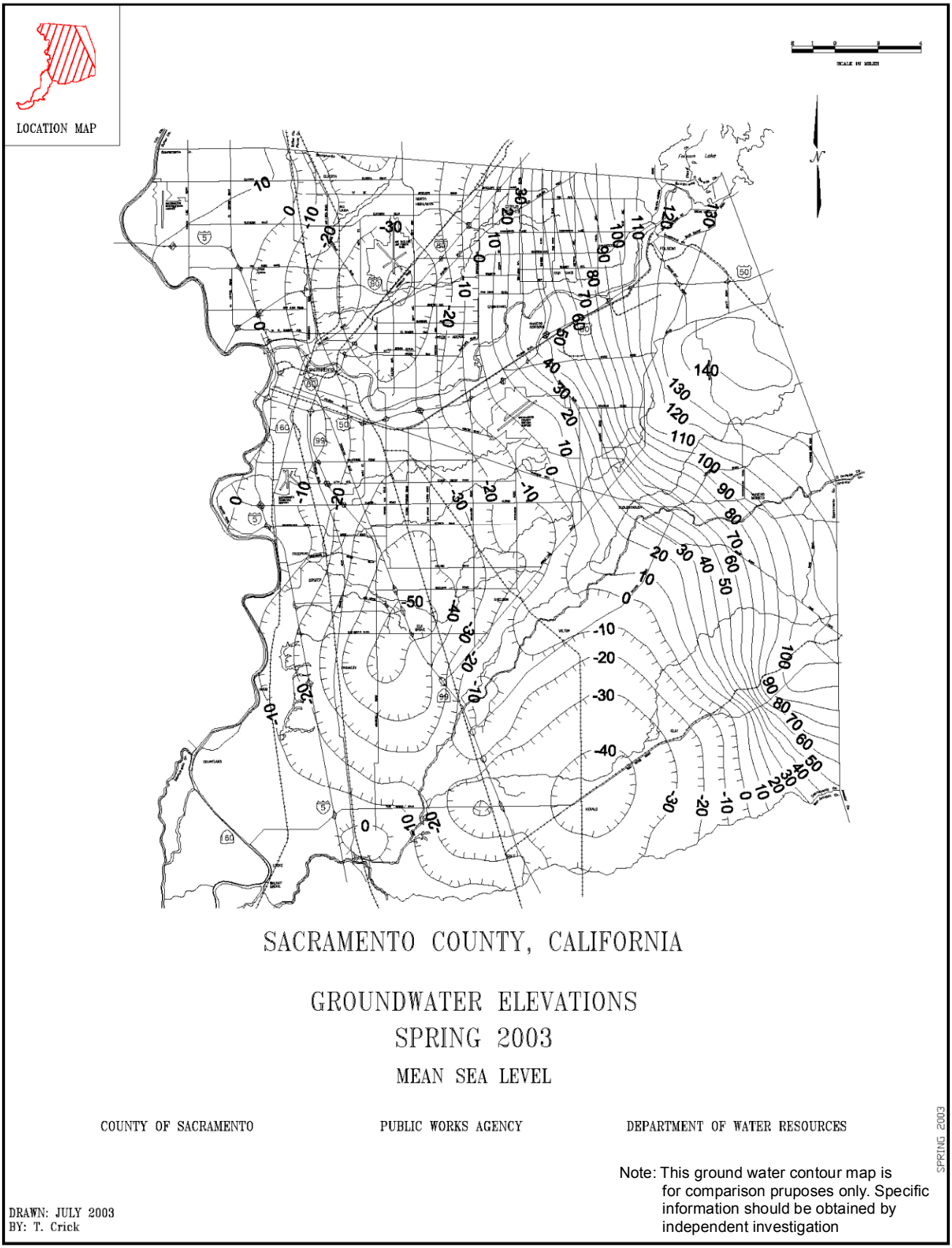
Use of groundwater in Sacramento County has generally increased since the installation of domestic wells in the 1850s. Intensive use of the groundwater basin has resulted in a general lowering of groundwater elevations in the SA Subbasin and surrounding areas (SCWA, 2004). Large cones of depression[4] have developed in Sacramento County as a result of multiple pumping operations in relative close proximity. As illustrated in Figure 4.4-1, one cone of depression is centered in the southern portion of the Zone 40 area and intersects the northern portion of the proposed pipeline route (SCWA 2004; County of Sacramento 2007). Groundwater levels in the southern portion of the proposed pipeline route, south of Lambert Road, generally range from 10 to 20 feet bgs; north of Lambert Road, groundwater levels generally range from 40 to 60 feet bgs and are more directly influenced by the regional cone of depression (SCWA 2004; County of Sacramento 2007; DWR, 2007). There are several public drinking water wells in the vicinity of the northern portion of the proposed pipeline route (PG&E 2006a).

4.4.2 Regulatory Setting

Federal and State

The legislation governing the water quality aspects of the proposed Project are the federal 1972 Clean Water Act (CWA) and, within California, the 1969 Porter-Cologne Water Quality Control Act, Division 7 of the California Water Code (Porter-Cologne Act). These acts are similar in their purpose and together provide the basis for water quality regulation in California. The purpose of the CWA is to protect and maintain the quality and integrity of the nation's waters by requiring states to develop and implement State water plans and policies. The Porter-Cologne Act established the California State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs); it instructed these boards to preserve and enhance the quality of California's water resources for the benefit of present and future generations (CVRWQCB 2003).

[4] Cone of depression: In three dimensions, this describes the conic shape of the localized groundwater surface that surrounds a pumping well, or group of wells. The apex or deepest portion of the cone is at the well, and the cone radiates outward from the well, as the groundwater surface gets higher.



SOURCE: County of Sacramento (2007)

PG&E Line 108 Natural Gas Pipeline Project EIR . 206283

Figure 4.4-1

Sacramento County Groundwater Elevations

The SWRCB and the RWQCB share the responsibility, under the Porter-Cologne Act, to formulate and adopt water policies and plans and to adopt and implement measures to fulfill CWA requirements. The SWRCB provides State-level coordination of the water quality control program by establishing statewide policies and plans for the implementation of State and Federal regulations. The nine RWQCBs throughout California adopt and implement water quality control plans (basin plans) that recognize the unique characteristics of each region with regard to natural water quality, actual and potential beneficial uses, and water quality problems. Specific to the proposed Project area, the *Water Quality Control Plan for the Sacramento River and the San Joaquin River Basins* (Basin Plan; CVRWQCB 2007) and the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (SIP) serve to protect water quality consistent with identified beneficial uses. These plans govern waste discharge requirements and non-point source pollution control.

CVRWQCB and Beneficial Use Designations

The CVRWQCB is responsible for the protection of the beneficial uses of waters within Sacramento County. The CVRWQCB uses planning, permitting, and enforcement authorities to meet this responsibility and has adopted the Basin Plan to implement plans, policies, and provisions for water quality management. The most recent version of the Basin Plan was published by the CVRWQCB in February 2007 (CVRWQCB 2007). The Basin Plan identifies beneficial uses of receiving waters, water quality objectives imposed to protect the designated beneficial uses, and strategies and schedules for achieving water quality objectives. Section 303 (c) (2) (B) of the Clean Water Act requires Basin Plans to include water quality objectives governing approximately 68 of the U.S. Environmental Protection Agency's (EPA) list of 126 pollutants.

In accordance with State policy for water quality control, the CVRWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan has identified existing and potential beneficial uses supported by the key surface water drainages throughout its jurisdiction. The beneficial uses designated in the Basin Plan for the water bodies relevant to the proposed Project are identified in Table 4.4-1. The applicable beneficial use categories are defined in Table 4.4-2.

Table. 4.4-1. Beneficial Uses for Project Area Surface Waters

Waterbody	MUN[a]	AGR	IND	PRO	REC 1	REC 2	WARM	COLD	WILD	MIGR	SPWN	NAV
Cosumnes River	E	E			E	E	E	E	E	E	E	
Mokelumne River (Camanche Reservoir to Delta)		E			E	E	E	E	E	E	E	
Delta	E	E	E	E	E	E	E	E	E	E	E	E

E = existing beneficial use
[a] Refer to Table 4.4-2, below, for definition of abbreviations
Source: CVRWQCB 2007.

Unless otherwise designated by the CVRWQCB, all groundwater in the Region is considered as suitable or potentially suitable, at a minimum, for municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO) (CVRWQCB 2007).

Clean Water Act (Section 303(d))

Under section 303(d) of the CWA, the State of California is required to develop a list of impaired water bodies that do not meet water quality standards and objectives. A statewide list of impaired water bodies was first established in 1998 and subsequently has been updated to include more recent information and new pollutants.

Table 4.4-3 summarizes details related to the listing of the Cosumnes River, the Mokelumne River, and the Delta as impaired water bodies. This list was developed by the CVRWQCB (2006) and includes pollutants and their potential sources. For those water bodies failing to meet standards, states are required to establish total maximum daily loads (TMDL). A TMDL defines how much of a specific pollutant a given water body can tolerate and still meet relevant water quality standards.

Table 4.4-2. Definitions of Beneficial Uses of Surface Waters

Beneficial Use	Description
Municipal and Domestic Supply (MUN)	Uses of water for community, military, or individual water supply systems including, but not limited to, drinking water supply.
Agricultural Supply (AGR)	Uses of water for farming, horticulture, or ranching including, but not limited to, irrigation, stock watering, or support of vegetation for range grazing.
Industrial Service Supply (IND)	Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
Industrial Process Supply (PRO)	Uses of water for industrial activities that depend primarily on water quality.
Navigation (NAV)	Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
Hydropower Generation (POW)	Uses of water for hydropower generation.
Water Contact Recreation (REC 1)	Uses of water for recreational activities involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white-water activities, fishing, or use of natural hot springs.
Non-Contact Water Recreation (REC 2)	Uses of water for recreational activities involving proximity to water, but not normally involving body contact with water, where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.
Warm Freshwater Habitat (WARM)	Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Cold Freshwater Habitat (COLD)	Uses of water that support cold water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.
Wildlife Habitat (WILD)	Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife (e.g., mammals, birds, reptiles, amphibians, invertebrates), or wildlife water and food sources.
Migration of Aquatic Organisms (MIGR)	Uses of water that support habitats necessary for migration or other temporary activities by aquatic organisms, such as anadromous fish.
Spawning, Reproduction, and/or Early Development (SPWN)	Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

Source: CVRWQCB 2007.

Table 4.4-3. Proposed 2006 CWA Section 303(d) List[a] of Water Quality Limited Segments in the Proposed Project Area

Name	Pollutant/Stressor	Source	Estimated Size Affected	Proposed TMDL Completion
Cosumnes River	Exotic Species	• Unknown	53 miles	2019
Lower Mokelumne River	Copper Zinc	• Resource Extraction • Resource Extraction	29 miles	2020 2020
Delta Waterways (central and eastern portions)	Chlorpyrifos DDT Diazinon Exotic Species Group A Pesticides[b] Mercury Unknown Toxicity	• Agriculture; Urban Runoff • Agriculture • Agriculture; Urban Runoff • Unknown • Agriculture • Resource Extraction • Unknown	11,425 acres	2019 2011 2019 2019 2011 2006 2019

[a] SWRCB approved listing as of October, 2006

[b] aldrin, dieldrin, chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorocyclohexane (including lindane), endosulfan, and toxaphene.

Source: CVRWQCB 2006

Clean Water Act (California Toxics Rule)

The EPA has developed national water quality standards in accordance with the CWA and these standards are used to determine the amount and the conditions under which pollutants can be discharged. The EPA published the California Toxics Rule (CTR) in the Federal Register (FR) establishing water quality standards for toxic pollutants for California waters (FR 31681) in May 2000. On April 28, 2000, the Office of Administrative Law approved the SIP and the SWRCB adopted the policy in March of 2000. The SIP establishes the implementation policy for all toxic pollutants.

Clean Water Act (National Pollutant Discharge Elimination System Program)

The CWA was amended in 1972 to provide that the discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit.

The 1987 amendments to the CWA added section 402(p), which establishes a framework for regulating municipal and industrial storm water discharges under the NPDES Program. In November 1990, the EPA published final regulations that establish storm water permit application requirements for discharges of storm water to waters of the United States from construction projects that encompass five or more acres of soil disturbance. Regulations (Phase II Rule) that became final on December 8, 1999, expanded the existing NPDES Program to address storm water discharges from construction sites that disturb land equal to or greater than one acre and less than five acres (small construction activity).

Order 99-08-DWQ

While federal regulations allow two permitting options for storm water discharges (individual permits and General Permits), the SWRCB has elected to adopt only one statewide General Permit at this time. This General Permit applies to all storm water discharges associated with construction activity and requires all dischargers where construction activity disturbs one acre or more to:

- Develop and implement a Storm Water Pollution Prevention Plan (SWPPP) which specifies Best Management Practices (BMPs) that would prevent all construction pollutants from contacting storm water and with the intent of keeping all products of erosion from moving off site into receiving waters.

- Eliminate or reduce non-storm water discharges to storm sewer systems and other waters of the nation.

- Perform inspections of all BMPs.

This General Permit is implemented and enforced by the nine RWQCBs; the CVRWQCB administers the storm water permitting program in the section of Sacramento County that includes the proposed Project site. PG&E would be required to submit a Notice of Intent (NOI) to obtain and comply with this General Permit. As part of this General Permit and the SWPPP, PG&E would incorporate, as appropriate, BMPs identified in the *PG&E Water Quality Construction Best Management Practices Manual* (PG&E 2006b). Dischargers are also responsible for notifying the relevant RWQCB of violations or incidents of non-compliance.

On August 19, 1999, the SWRCB reissued the General Construction Storm Water Permit (Water Quality Order 99-08-DWQ referred to as “General Permit”). In

September 2000, a court decision directed the SWRCB to modify the provisions of the General Permit to require permittees to implement specific sampling and analytical procedures to determine whether BMPs implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt; and (2) preventing other pollutants that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges, from causing or contributing to exceedances of water quality objectives. The monitoring provisions in the General Permit have also been modified pursuant to the court order.

Order No. 5-00-175

The CVRWQCB has also adopted a general NPDES permit for short-term discharges of small volumes of wastewater from certain construction-related activities as specified in the Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters (Order No. 5-00-175, NPDES No. CAG995001). Discharges may be covered by the permit provided they are either four months or less in duration, or the average dry weather discharge does not exceed 0.25 million gallons per day. The proposed Project would require approximately three to four months to construct; PG&E would obtain and comply with this permit.

California Department of Water Resources, Reclamation Board

The DWR, Reclamation Board (Reclamation Board), regulates the design and construction of encroachments which may affect flood control works and floodways along the Sacramento and San Joaquin Rivers and their tributaries. The Reclamation Board has jurisdiction over any project that proposes to work in a regulated stream, designated floodway, on Federal flood control project levee slopes, or within 10 feet of the levee toe; this includes projects related to the installation of pipelines, conduits, and utility lines. Approval by the Reclamation Board is required for projects or uses which encroach into rivers, waterways, and floodways within and adjacent to Federal and State authorized flood control projects and within designated floodways adopted by the Reclamation Board. As described above, the southern portion of the proposed pipeline route that extends from the south bank of the Mokelumne River to a point about 5,250 feet to the north near the second HDD exit area, lies within the Cosumnes River Designated Floodway (Reclamation Board 2007).

CCR Title 23, section 123 (f) (3), the section of code governing the Reclamation Board's authority, contains the following condition: If the installation is to be more than fifty (50)

feet below the levee and the entire floodway and streambed, the board may waive the requirement for a permit provided a letter of intent is filed with the board prior to commencement of the project. As such, PG&E would file a letter of intent and, if necessary, acquire a permit in order to confirm Reclamation Board approval before beginning work within the designated floodway.

Local

Sacramento County General Plan

The Conservation Element of Sacramento County's General Plan includes policies specifically aimed at preserving, protecting, and rehabilitating natural streams. The policies apply to specific urban stream corridors designated in the General Plan that are located north and east of the proposed pipeline route. These General Plan policies do not apply to the proposed Project.

San Joaquin County General Plan

The following objectives and policies from the San Joaquin County General Plan concerning hydrology and water quality are relevant to the proposed Project and the subsequent environmental analysis. The proposed Project, as well as mitigation measures in this EIR (see Section 4.4.4), are consistent with these objectives and policies:

Water Resources and Quality Objectives (Chapter VI)

3. To protect the groundwater basins of the County from further overdraft.

4. To prevent and eliminate contamination of surface water and groundwater.

5. To recognize the surface waters of San Joaquin County as resources of State and national significance for which environmental and scenic values must be protected.

Water Quality Policies (Chapter VI)

2. Surface water and groundwater quality shall be protected and improved where necessary.

3. The use and disposal of toxic chemicals, the extraction of resources, and the disposal of wastes into injection wells shall be carefully controlled and monitored to protect water quality.

Flood Hazards Objectives (Chapter V)

1. To protect people and property from flood hazards.

Floodplain Development Policies (Chapter V)

3. In designated floodways, uses shall be restricted to those that are tolerant of occasional flooding, such as agriculture, outdoor recreation, extraction, and natural resource areas.

Flood Control Policies (Chapter V)

5. The primary use and purpose of levees shall be flood control. Other uses shall be allowed only if the uses are compatible with the primary purpose of the levee and do not reduce the flood control integrity.

Sacramento County Urban Runoff/Stormwater Quality Control

The Sacramento County Water Agency, City of Sacramento, City of Folsom, and the City of Galt have a joint NPDES permit (No. CAS082597) that was granted in December 2002. The permittees listed under the joint permit have the authority to develop, administer, implement, and enforce storm water management programs within their own jurisdiction. The joint permit is intended to implement both the Basin Plan and the Sacramento Stormwater Quality Improvement Plan (SQIP). Together, they provide a comprehensive plan allowing permittees to direct the county's Stormwater Management Program (SWMP) priorities and activities through 2008. These priorities and activities include provisions to meet permit requirements, including program management, target pollutant reduction strategy, monitoring program, program element implementation (i.e., industrial, municipal, construction, public education and outreach elements), and program evaluation. Further, the County Code, Chapter 15.12 Stormwater Management and Discharge Control, mandates projects to incorporate source point and/or treatment controls to minimize long-term post-construction discharge of stormwater pollutants from new development or modifications to existing development, and specific control measures to reduce the risk of non-stormwater discharge and/or pollutant discharge into the county's drainage system or receiving waters from business-related activities.

Urban stormwater runoff is defined in the permit as including storm water runoff, dry weather surface runoff, wash water related to street cleaning or maintenance, infiltration, and drainage related to storm events. The permit regulates the discharge of all wet and dry weather urban storm water runoff within the county and requires the

county to implement BMPs to reduce pollutants in stormwater, as identified in the SQIP/SWMP. The BMPs could include but are not limited to: (1) educational programs on the impacts of potentially harmful chemicals dumped into the storm water drainage systems, and good housekeeping procedures to prevent accidental discharge of harmful contaminants; (2) research on and enforcement of regulations giving local jurisdictions the legal authority to prevent the improper disposal of potentially harmful wastes and eliminate cross-connections, which allow sanitary sewage and/or commercial/industrial wastewater to enter storm sewers or drainage facilities; and (3) public agency control measures, such as implementing intensified street sweeping programs in strategic locations (e.g., major parking lots, shopping malls) and/or at strategic times (e.g., following extended periods of dry weather).

4.4.3 Significance Criteria

General

An adverse impact on water quality is considered significant and would require mitigation if Project construction or operation would:

- Result in violation of Federal or State Agency quantitative or qualitative water quality criteria, standards, or objectives (including objectives promulgated by the CVRWQCB and criteria set forth in the Proposed California Toxics Rule); and
- Otherwise degrade or impair beneficial uses designated by the CVRWQCB

Groundwater

An adverse impact on groundwater resources is considered significant and would require mitigation if Project construction or operation would:

- Alter the flow of groundwater to local springs or wetland areas; or
- Interrupt or degrade groundwater used for private or municipal purposes; or
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

Surface Water

An adverse impact on surface water resources is considered significant and would require mitigation if Project construction or operation would:

- Result in increased sedimentation or erosion that adversely affects the operation of irrigation water control structures, gates, or valves or the quality of municipal water supply reservoirs;
- Result in increased sedimentation or erosion such that degradation of channel stability or water quality results;
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on-site or off-site flooding;
- Place permanent structures within the 100-year floodplain that would impede or redirect flood flows; or
- Degrade the integrity of structures, such as bridges, pipelines, and utilities due to erosion and improper conveyance of stormwater during construction and operation.

4.4.4 Impact Analysis and Mitigation

Applicant Proposed Measures

Applicant Proposed Measures (APMs) have been identified by PG&E in its Environmental Analysis prepared for the CSLC and through subsequent coordination with CSLC. The APM that is relevant to this section is presented below. This impact analysis assumes that the APM would be implemented as defined below.

APM WQ-1. Verify Well Locations. Prior to construction of the proposed Project, well locations within 200 feet of the excavation will be verified by PG&E through field surveys to determine if the wells are currently in use and if their area of influence intersects the proposed Project site. With the landowner's permission, PG&E will test the wells to determine baseline flow conditions and monitor these wells during construction of the proposed Project. If, through monitoring, it is determined that Project construction is affecting well production, PG&E will cease construction activities or arrange to supply water at the well location and consult with the landowner. Surveys will be conducted by PG&E prior to construction to ensure that any unidentified springs are avoided during construction.

The criteria to test wells within 200 feet of the project was established based upon the local soils and construction methods. Since the project trenching would be relatively shallow in comparison to the assumed well

depths, the influence the project may have on the aquifer supplying the wells drops off drastically as a function of distance from the excavation. If, during monitoring, it is determined that wells are affected within the 200-foot separation distance, PG&E will extend the distance until it is determined that wells are no longer affected.

Water Quality During Construction

Construction of the proposed Project would involve earth-disturbing activities that could discharge sediment into the Cosumnes and Mokelumne Rivers, or to local waterways, via runoff from construction sites. Construction of the proposed Project would also involve the use of machinery and construction materials that could discharge other pollutants (e.g., petroleum products and materials such as cement) into waterways via runoff from construction sites. Beneficial uses of the Cosumnes and Mokelumne Rivers are protected by water quality objectives established by the CVRWQCB. These objectives pertain to, among other things, chemical constituents, floating material, oil and grease, sediment, settleable material, suspended material, and turbidity.

PG&E would obtain and comply with a General Permit (Order 99-08-DWQ), which is intended to ensure a project's compliance with State water quality objectives, laws, and regulations. As part of this General Permit, PG&E would develop and implement a SWPPP for construction activities performed as part of the proposed Project. PG&E would incorporate, as appropriate, BMPs identified in the PG&E Water Quality Construction Best Management Practices Manual (PG&E 2006b). The General Permit requires permittees to implement specific sampling and analytical procedures to determine whether BMPs implemented on a construction site are: (1) preventing further impairment by sediment in storm waters discharged directly into waters listed as impaired for sediment or silt; and (2) preventing other pollutants that are known or should be known by permittees to occur on construction sites and that are not visually detectable in storm water discharges from causing or contributing to exceedances of water quality objectives. The SWPPP would include methods, implementation schedules, and reporting requirements, and the CVRWQCB would require reporting of the performance of the SWPPP-recommended erosion and pollution control strategies.

Due to the need for dewatering and the discharge of hydrostatic test water, the proposed Project would require the discharge of water to the local land surface, local waterways, the Cosumnes River, and/or the Mokelumne River. As summarized above, the CVRWQCB has adopted a general NPDES permit for short-term discharges of

small volumes of wastewater from certain construction-related activities as specified in the Waste Discharge Requirements General Order for Dewatering and Other Low-Threat Discharges to Surface Waters (Order No. 5-00-175, NPDES No. CAG995001). Discharges may be covered by the permit provided they are either four months or less in duration, or the average dry weather discharge does not exceed 0.25 million gallons per day (mgd). The proposed Project would require approximately three to four months for construction, and the volume of water discharged by dewatering and hydrostatic testing would be less than 0.25 mgd. As such, PG&E would obtain and comply with this permit. This permit also specifies standards for testing, monitoring and reporting, receiving water limitations, and discharge prohibitions. In the event that the proposed Project would need to discharge more than 0.25 mgd, PG&E would obtain and comply with a separate discharge permit and/or certification from the CVRWQCB.

Compliance with the General Permit and the low-threat discharge permit, as well as the implementation of BMPs identified in the PG&E Water Quality Construction Best Management Practices Manual (PG&E 2006b) would ensure PG&E meets all discharge requirements to prevent sediment or other construction-related pollutants from entering local waterways. Water quality impacts from construction of the proposed Project would be less than significant (Class III).

Water Quality During Operation and Maintenance

Operation and maintenance of the proposed pipeline could require minor patch work if sections of pipe are found to be leaking. During patch work for leaks, a trench would be dug around the leak for repair. This work would be required to comply with the General Permit and the low-threat discharge permit, if applicable. However, at the time of the repair, a NPDES permit for construction activities would not be required for maintenance and/or repair areas of less than one acre. Further, PG&E would use, maintain, and update its SWPPP to prevent soils and contaminants from entering stormwater runoff during any work done along the pipeline route. As such, water quality impacts from operation and maintenance of the proposed Project would be less than significant (Class III).

Groundwater

Installation and operation of the proposed pipeline would involve the excavation and alteration of subsurface material by means of three principal methods: trench excavation to a depth of approximately 7.5 feet bgs; hammer and bore to a depth of 8 to

16 feet bgs; and HDD to a depth of 50 to 70 feet bgs. Excavation and alteration of subsurface material could affect groundwater movement by changing the lateral and/or vertical permeability of the existing subsurface material; this could alter the flow of groundwater to local springs or wetland areas, interrupt groundwater used for private and municipal purposes, and/or lower the local groundwater table.

Trench excavation would not be likely to encounter or alter groundwater, as the shallowest water table depths are generally 10 to 20 feet bgs. Hammer and bore activities may encounter shallow groundwater, but excavation depths would not extend deep enough to alter groundwater movement. Any dewatering that would be necessary would conform to CVRWQCB Order No. 5-00-175, NPDES No. CAG995001. HDD activities would likely encounter shallow groundwater, especially in the southern portion of the Project area where drilling beneath the Mokelumne and Cosumnes Rivers is proposed. However, this method excavates a tunnel which is roughly the same diameter as the pipe to be installed and there would only be limited fill material required at the entry and exit holes. Lateral groundwater permeability would be altered only within the small space, or seam, between the installed pipe and the native subsurface. Portions of the tunnels would be open during construction prior to installation of the pipeline. This could facilitate the movement of groundwater because, due to the cone of depression just northeast of the Project area, the groundwater hydraulic gradient in this area parallels the direction of the pipeline and HDD work. Groundwater movement through the tunnel would be minimal because the tunnel would be filled with pressurized drilling mud. Any effect of the HDD work on lateral groundwater movement would be temporary and, in the case of the southern portion of the Project area, well below the beds of the Mokelumne and Cosumnes Rivers. PG&E anticipates that a total of approximately five weeks would be needed to complete work at all seven HDD sites.

Because the groundwater hydraulic gradient in the Project area is driven by regional precipitation and topography, and heavily influenced by multiple existing pumping operations that create large, regional cones of depression, the proposed Project would not be capable of influencing groundwater movement on a long-term basis. In addition, the shallow aquifer extends 200 to 300 feet bgs, which is well below the deepest excavation depth proposed. The Project would not influence vertical permeability. Impacts to groundwater would be less than significant (Class III).

Flooding

The majority of the proposed Project falls within the 100-year floodplain delineated by FEMA (2004). The proposed Project does not include structures which would impede or redirect flood flows. The southern portion of the proposed Project site that extends from the south bank of the Mokelumne River to a point about 5,250 feet to the north, near the second HDD exit area, lies within the Cosumnes River Designated Floodway (Reclamation Board 1974). As discussed above, the Reclamation Board regulates the design and construction of encroachments which may affect flood control works and floodways along the Sacramento and San Joaquin Rivers and their tributaries; PG&E would file a letter of intent and, if necessary, acquire a permit in order to confirm Reclamation Board approval before beginning work within the designated floodway. Potential flooding impacts would be less than significant (Class III).

4.4.5 Impacts of Alternatives

No Project Alternative

The No Project Alternative would not result in the near-term construction of a new natural gas pipeline between the Thornton and Elk Grove Stations. The less-than-significant hydrology and water quality impacts described above that would occur under the proposed Project would not occur under the No Project Alternative.

Franklin 1 Alternative

The Franklin 1 Alternative would not differ substantially in length compared to the proposed Project. Potential water quality impacts of the Franklin 1 Alternative would be related primarily to ground-disturbing activities during construction and to the need for dewatering and the discharge of hydrostatic test water. Potential water quality impacts related to construction (e.g., erosion, increased turbidity) would be reduced by provisions in the General Permit, including the requirement for developing a SWPPP. For the Franklin 1 Alternative, the volume of water discharged by dewatering and hydrostatic testing would be relatively small. As such, PG&E would obtain and comply with the low-threat discharge permit, which specifies standards for testing, monitoring and reporting, receiving water limitations, and discharge prohibitions.

In the southern portion of the Franklin 1 Alternative, where groundwater would be the shallowest, this alternative is no different than the proposed Project. Further, the extent and nature of excavation techniques would essentially be the same, though the alignment of the Franklin 1 Alternative is slightly different than the proposed Project.

Potential groundwater and flooding impacts of the Franklin 1 Alternative are the same as those previously described for the proposed Project and would be less than significant (Class III).

Franklin 2 Alternative

The Franklin 2 Alternative would not differ substantially in length compared to the proposed Project. Potential water quality impacts of the Franklin 2 Alternative would be related primarily to ground-disturbing activities during construction and to the need for dewatering and the discharge of hydrostatic test water. Potential water quality impacts related to construction (e.g., erosion, increased turbidity) would be reduced by provisions in the General Permit, including the requirement for developing a SWPPP. For the Franklin 2 Alternative, the volume of water discharged by dewatering and hydrostatic testing would be relatively small. As such, PG&E would obtain and comply with the low-threat discharge permit, which specifies standards for testing, monitoring and reporting, receiving water limitations, and discharge prohibitions.

In the southern portion of the Franklin 2 Alternative, where groundwater would be the shallowest, this alternative is no different than the proposed Project. Further, the extent and nature of excavation techniques would essentially be the same, though the alignment of the Franklin 2 Alternative is slightly different than the proposed Project. Potential groundwater and flooding impacts of the Franklin 2 Alternative are the same as those previously described for the proposed Project and would be less than significant (Class III).

Project without Bridge Replacement Alternative

The Project without Bridge Replacement alternative would not alter any portion of the proposed Project pipeline alignment or the construction methods. Under this alternative, the historic suspension bridge would be left in place. As a result, potential groundwater, water quality, and flooding impacts associated with the Project without Bridge Replacement alternative would not differ from those described above for the proposed Project. Impacts would be less than significant (Class III).

4.4.6 Cumulative Projects Impact Analysis

In addition to the proposed Project, other projects may contribute to cumulative hydrology and water quality impacts in the vicinity of the proposed Project. The

identified cumulative projects potentially contributing to cumulative impacts are discussed in Section 3.4, Cumulative Related Future Projects.

Most of the proposed Project's potential hydrology and water quality impacts would result from short-term, temporary construction activities. When projects are constructed simultaneously and within the same area, they can result in local- and/or regional-scale cumulative impacts to water resources and water quality. As discussed in Section 3.4, Cumulative Related Future Projects, several projects are planned in the vicinity of the proposed Project. The timing of construction for the cumulative projects is unknown, and it is possible that portions of these projects could be constructed simultaneously and in the same vicinity as the proposed Project. For areas under the CVWQCB jurisdiction, which includes all of the cumulative projects, a comprehensive regulatory framework exists for managing and mitigating potential water quality impacts as a result of short-term construction activities. Further, the proposed Project would not result in any long-term hydrology and water quality impacts. As such, the proposed Project would not result in cumulatively considerable hydrology and water quality impacts. Cumulative impacts would be less than significant (Class III).